



RFP 4349 August 2010

REQUEST FOR PROPOSALS

IMPACT OF GALVANIC CORROSION ON LEAD RELEASE FOLLOWING PARTIAL LEAD SERVICE LINE REPLACEMENT (RFP 4349)

Objective

This project will conduct an independent scientific review that expands upon the current research to evaluate and resolve discrepancies between two recently published Water Research Foundation projects relating to lead release due to galvanic corrosion following partial lead service line replacement in the DC Water system and other participating utilities. A second phase of this project will include collecting and evaluating field data from participating utilities related to galvanic corrosion after partial lead service line replacement.

Background

Two projects were published in 2010 by the Water Research Foundation which both addressed galvanic corrosion independently. One project, "Effect of Changing Disinfectants on Distribution System Lead and Copper Release, Part 2" (#3107), concluded that galvanic corrosion was an issue but that the galvanic effects were transient and short-lived. The second project, "Contribution of Galvanic Corrosion to Lead (Pb) in Water after Partial Lead Service Line Replacements" (Project Continuation Reserve (PCR) report for #4088 which will be published later in 2010) concluded that galvanic corrosion is an issue also, but that the effect can be substantial and long-term. Although there may be a number of issues related to galvanic connections, the Foundation and D.C. Water are particularly interested in building on the work and resolving discrepancies identified in these two research reports.

Research Approach

The work will further the understanding of the implications of galvanic corrosion to lead release into drinking water relative to partial lead service line replacements.

The research proposal should provide a justified scientific research approach designed to address whether galvanic effects are transient and short-lived, or are substantial and long-term. The two Water Research Foundation reports that should be referenced are, “Effect of Changing Disinfectants on Distribution System Lead and Copper Release, Part 2”, (#3107), and “Contribution of Galvanic Corrosion to Lead (Pb) in Water after Partial Lead Service Line Replacements (PCR for project #4088).

The research will evaluate the two referenced documents and utilize rigorous scientific design with particular attention to quality assurance and quality control practices to resolve the questions inherent in the above work as simply as possible. Test conditions should:

1. measure actual lead in water (dissolved and particulate). (Proposers may also choose to compare lead levels to electrochemical measures of galvanic potential/current and corrosion rates.);
2. include a set of test conditions that compare laboratory and field studies using actual utility waters and pipe samples;
3. assess the effect of realistic couplings between lead pipe and copper pipe on galvanic corrosion (e.g., brass corporation valve or brass compression fitting)
4. define and justify time period suggested for a reasonable passivation period prior to testing;
5. consider various water quality conditions that may affect metals release and corrosion [i.e., alkalinity, pH, phosphate, chloride-to-sulfate mass ratio (CSMR) etc.]. Justification should be provided for the conditions defined;
6. be conducted under both stagnant and continuous flow conditions (i.e., intermittent flow which is more representative of typical water usage at homes);
7. evaluate the effects of other water qualities on galvanic corrosion (e.g., corrosion inhibitor added to the water);
8. observe differences between laboratory settings/analyses and true field settings/analyses using, at a minimum field data collected from Washington DC and possibly other cities with lead service lines;
9. address and provide justification for the time of year for testing

Potential aspects of further research included in the PCR for project #4088 are provided below. These ideas may be included, but are not required.

- quantify the relevant contribution of galvanic corrosion to lead release, compared to other mechanisms such as normal dissolution, deposition corrosion, particle detachment, and lead retention in pipe scale;
- assess the effect of non-metallic or dielectric couplings that break the galvanic connection between lead pipe and copper pipe on galvanic corrosion (e.g., plastic fittings).

Proposal Preparation Instructions

Proposals submitted in response to this RFP must be prepared in accordance with the Water Research Foundation “Guidelines for Solicited Proposals.” The most current version of these

guidelines is available at <http://www.waterrf.org/Research/Administration/Proposalguidelines/>. The guidelines contain instructions that the applicant must follow when preparing a proposal.

Eligibility to Submit Proposals

This RFP solicits proposals from all technically qualified U.S. based or non-U.S. based applicants, including educational institutions, research organizations, federal or state agencies, local municipalities, and consultants or other for-profit entities.

The Foundation's Board of Trustees has established a Timeliness Policy that addresses researcher adherence to project schedule. The policy can be reviewed at <http://www.waterrf.org/Research/Administration/Policies/Policies/TimelinessPolicy.pdf>. Researchers who are late on any ongoing Foundation-sponsored studies without an approved no-cost extension are not eligible to be a named participant in any proposal. If you have any questions about your eligibility for Foundation projects, please contact your current Foundation project manager directly.

Budget and Funding Information

The maximum funding available for this project is \$150,000 (\$75,000 in Foundation funds and \$75,000 in tailored collaboration funds from DC Water). Proposers are encouraged to contribute additional cost-share, applicant in-kind, or third party in-kind contributions that meet Code of Federal Regulation (CFR) requirements in 2 CFR Part 215.23, or the requirements of Office of Management and Budget (OMB) Circular A-102.24.

Indirect costs are allowable based on the rate approved by the applicant's cognizant federal agency, or an independent CPA audited statement or an independent accountant's compiled Statement of Direct Labor, Fringe Benefits and General Overhead. Detailed budget preparation instructions are provided in the "Guidelines for Solicited Proposals."

Period of Performance

Due to the regulatory nature of this research effort, preliminary data must be available by March 2011. The full proposed project schedule should be realistic, allowing ample time for the preparation of final reports and for review of project results. It is the Foundation's policy to negotiate a reasonable schedule for each research project. Once this schedule is established, the Foundation and its contractors have a responsibility to adhere to the agreed-upon schedule. Under the Foundation's No-Cost Extension Policy, a project schedule cannot be extended more than nine months beyond the original contracted schedule, regardless of the number of extensions granted. The policy can be reviewed at <http://www.waterrf.org/Research/Administration/Policies/>.

Utility Participation

The Foundation is especially interested in receiving proposals which include both participation and contribution of resources from water utilities in the research effort. Because this is a Tailored

Collaboration project with DC Water, proposers must participate with DC Water. Additionally, proposers should seek utility participation from other water utilities.

DC Water has offered the following assistance in support of the project:

- (1) 3 pipe loops at the DC Water Fort Reno Pumping Station
- (2) harvested lead pipes
- (3) graduate student support
- (4) some field testing analyses

Information on utilities that have indicated an interest in participating in this research project is attached. While the Foundation makes utility participation volunteers known to applicants, it is the applicant's responsibility to negotiate utility participation in their particular proposal, and the utilities are under no obligation to participate.

Application Procedure and Deadline

Proposals must be postmarked or date-stamped by the carrier on or before October 1, 2010

Seven copies, plus one unbound copy (8 copies total) of the proposal should be sent to:

**Proposals – RFP 4349
Water Research Foundation
6666 W. Quincy Avenue
Denver, CO 80235**

Questions to clarify the intent of this Request for Proposals may be addressed to the project manager, Traci Case at 303.347.6120 or by e-mail at tcase@waterrf.org.